

REMARKS/ARGUMENTS

Claims 1-10 were pending. Claims 6 and 9-10 have been canceled without prejudice. Claims 1-5 and 7-8 have been amended. It is respectfully submitted that such amendments are supported by the application as originally filed, and that no new matter has been entered. Claims 1-5 and 7-8 remain pending.

Claim Rejections under 35 U.S.C. § 102

The Examiner rejects claims 1-4 and 6 under 35 U.S.C. § 102(b) as being anticipated by Goedde et al., U.S. Patent No. 5,736,915. The Examiner states that Goedde et al. inherently discloses an inert gas having a global warming coefficient rated 1 or below and a molecular weight less than 146.

As set forth above, claims 1-4 have been amended, and claim 6 has been canceled without prejudice. It is respectfully submitted that Goedde et al. fails to anticipate claims 1-4 as amended.

Embodiments of the present invention are directed toward providing a gas insulation transformer that contributes to the protection of the global environment and that is light in weight and low in production cost.

As defined in the amended claim 1, a self-cooled gas insulation transformer according to an embodiment of the present invention comprises an apparatus including an iron core and a coil that is wound around the core, a tank to receive the apparatus therein and an inert gas that is filled in the tank as an insulating and cooling medium, in which global warming coefficient of said inert gas is rated 1 or below. Further, the iron core is made of a material selected from a magnetic domain control silicone steel, a silicone steel of high orientation and an amorphous alloy.

Goedde et al., as understood, discloses a transformer including an expandable internal chamber which houses a core and coil assembly and completely filled with dielectric fluid having a pressure less than one atmosphere and the wall of which are flexible and are permitted to bow inwardly and outwardly as the volume of the dielectric fluid changes due to

thermal expansion and contraction. Contrary to the examiner's assertion that Goedde et al. discloses a self-cooled gas insulation transformer (10), Goedde et al. as understood only discloses a dielectric liquid coolant which fills completely a core and coil assembly and performs its cooling and insulating function.

The dielectric fluid of Goedde et al., as understood, comprises a mixture of hydrocarbons selected from the group consisting of aromatic hydrocarbons, polyalphaolefins, polyolesters, and natural vegetable oils. See column 8, lines 11-24.

It is respectfully submitted that Goedde et al. provides neither teaching nor suggestion of the problem of the protection of the global environment to be solved in relation to a gas-filled transformer that is light in weight and low in production cost, and there is neither teaching nor suggestion of employment of an inert gas completely filling an iron core and a coil, a global warming coefficient of which is rated 1 or below.

Although Goedde et al. as understood makes reference to air or inert gas, such as nitrogen, in column 3, line 27, the air or inert gas is only contained in the headspace above the fluid in the tank and as disclosed in lines 30-34, the headspace is a thermal insulator and prevents effective heat transfer from the fluid to the tank cover. The disclosure of Goedde et al., as understood, has nothing to do with an inert gas-filled transformer as embodied in aspects of the present invention.

As defined in the amended claims, according to embodiments of the present invention, a self-cooled gas insulation transformer is filled with an inert gas and, in order to attain a loss characteristics of a high-efficient transformer, the iron core is made from one of a magnetic domain control silicone steel, a silicone steel of high orientation, and an amorphous alloy.

It is respectfully submitted that Goedde et al. fails to teach, indicate or suggest the above-noted features of amended claims 1-4, among others. Thus, it is respectfully submitted that claims 1-4 are now allowable.

Claim Rejections under 35 U.S.C. § 103

The Examiner rejects claims 5, 7/5, 8/5 and 9-10 under 35 U.S.C. § 103 as being unpatentable over Goedde et al. in view of Ikema, JP 09-7843. The Examiner states that it would have been obvious to use amorphous [sic] for the core of Goedde et al., as suggested by Ikema, for the purpose of improving performance. The Examiner states that regarding claims 7/5, 8/5 and 10, the specific pressure used would have been an obvious design consideration based upon the intended application and operating environment.

The Examiner rejects claims 7/1-4, 7/6, 8/1-4 and 8/6 under 35 U.S.C. § 103 as being unpatentable over Goedde et al. The Examiner states that the specific pressure used would have been an obvious design consideration based upon the intended application and operating environment.

As set forth above, claim 5 has been amended, and claims 9-10 have been canceled without prejudice. (Claims 7-8 have also been amended for clarity.)

As defined in the amended claim 5, a self-cooled gas insulation transformer according to an embodiment of the present invention comprises an apparatus including an iron core and a coil that is wound around the core, a tank to receive the apparatus therein and an inert gas that is completely filled in the tank as an insulating and cooling medium, in which the iron core and coil are possessed with a loss characteristics of a high-efficient transformer and the gas is an inert gas, a global warming coefficient of which gas being rated 1 or below. Further, the iron core is made of a material selected from a magnetic domain control silicone steel, a silicone steel of high orientation and an amorphous alloy.

Ikema, as understood, discloses a transformer core (2) formed of amorphous magnetic alloy material disposed in a transformer tank (4). The tank is filled with cooling and insulating oil (5). Ikema, as understood, teaches a structure in which a fragment accumulation box (8) is provided at the bottom of the tank so that fragments of the amorphous magnetic alloy thin strip falling in the insulating oil can be accumulated therein.

It is respectfully submitted that Ikema has nothing to do with the problem solved by the embodiments of the present invention. The Examiner's assertion that it would be obvious

to combine Ikema and Goedde et al. is respectfully traversed. The problem solved by Ikema has nothing to do with improving the performance of Goedde et al.

Neither Goedde et al. nor Ikema, as understood, teaches the problem solved by the embodiments of the present invention, and neither teaches nor suggests a self-cooled gas insulation transformer as claimed.

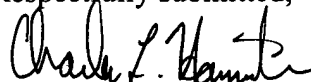
Thus, it is respectfully submitted that claim 5 is allowable. It is respectfully submitted that claims 7-8 are allowable as claims dependent from their respective parent claims, which are allowable as discussed above.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 650-326-2400.

Respectfully submitted,



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